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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/813,123      | 03/31/2004  | Shun-ichi Miyazaki   | 042249              | 3713             |

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EXAMINER

HUGHES, JAMES P

ART UNIT PAPER NUMBER

2883

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/813,123 | <b>Applicant(s)</b><br>MIYAZAKI ET AL. |  |
|                              | <b>Examiner</b><br>James P. Hughes   | <b>Art Unit</b><br>2883                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments received on June 6, 2006 with respect to claims 1-5 have been considered but are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies – i.e., that “the device of the present invention which applies an electric field to the PN junction part to change the refractive index both of the core layer and the clad layer, and thereby controls the traveling directing light” (see page 3) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding Applicant's arguments beginning on page 4 concerning claim 2; it is unclear as to what grounds they are arguing for patentability. Respectfully, they appear to only recite the claim language. Thus, they fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Additionally, it is noted that Applicant's amendment may not constitute a complete and responsive replay to the previous Office Action because it does not specifically address the rejections of claims 3, 4, or 5. However, as the claims are clearly open to rejection on grounds of record as set forth below and in the previous Office Action, and in the spirit of compact prosecution, a Final Rejection is herein issued. See MPEP 714.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan et al. (5,528,707) in view of Hinkov (5,920,662). Hinkov teaches an optical path control device comprising an optical waveguide having a clad layer (e.g. 1) formed on a substrate (e.g. LiNbO<sub>3</sub>) and a core layer (3) stacked on the clad layer, wherein a voltage is applied between a plurality of triangular prism electrodes (e.g. 5) placed on one side of the wave guide and a second counter electrode (8). (See e.g. Col. 5, ll. 35 – Col. 6, l. 42 and Fig. 6d) Hinkov teaches that the prism electrode structure provides an efficient means of directing the optical path of a lightwave signal traveling in the waveguide core (3) via a well-known prism effect which controls the refractive index of the core (3). (See e.g. Col. 4, ll. 5-50)

While Hinkov teaches that the position of light incident on device (e.g. from laser diode 12) may be controlled (e.g. by grating structure 15), thereby controlling the incident light. (See e.g. Col. 7, ll. 25-60) The specific algorithm employed is not disclosed, it would have been obvious to one of ordinary skill in the art at the time of the invention (if not inherent) that an algorithm would be employed to efficiently direct light through the device of Hinkov.

However, Hinkov does not teach a doping profile for the cladding or core layers as would be found in a semiconductor electro-optical device.

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Sullivan teaches an optical modulator comprising an optical waveguide with a core (12) sandwiched between an upper clad (13) and a lower clad (11) placed on a substrate (6). The lightwave passing through the core is controlled via an upper electrode (8) and a lower electrode (9). While Sullivan does not teach the exact doping profile used, it is taught that the core and cladding layers may be undoped, n-type, or p-type with the exact profile chosen by well known design characteristics. Additionally, it is taught that such semiconductor systems can provide achieve electro-optic efficiencies and yield on on/off switch to the passing high frequency signal (See e.g. Col. 7, ll. 1 – Col. 8, ll. 20 and Figs. 2 and 4)

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a semiconductor control device for high frequency waves as taught by Sullivan in the invention of Hinkov because such a semiconductor system would allow for efficient simple on/off functioning of the high frequency (i.e. short wavelength) signals employed in the device of Hinkov. One of ordinary skill in the art would have been motivated to do so because it would yield an efficient device and/or which could be integrated into other semiconductor technologies.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

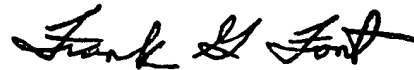
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James P. Hughes whose telephone number is 571-272-2474. The examiner can normally be reached on Monday - Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James P. Hughes  
Patent Examiner  
Art Unit 2883



Frank G. Font  
Supervisory Patent Examiner  
Technology Center 2800